ABSTRACT

This document constitutes the final report of efforts undertaken in regard to grant N00014-89J-3172. In this program, students from the MAST Academy and other public and private high schools in Dade County were placed in laboratory positions at three oceanographic institutions on Virginia Key, Miami, Florida during the summer of 1992. These students received direct supervision from faculty members of the Rosenstiel School of Marine and Atmospheric Science (RSMAS) and from staff scientists at the Atlantic Oceanographic and Meteorological Laboratories of the National Oceanic and Atmospheric Administration (AOML/NOAA) and at the Southeast Fisheries Center, National Marine Fisheries Service (SEFC/NMFS). This program enabled high school students the opportunity to work in a marine science research environment and to more accurately appraise career opportunities in oceanographic sciences.

This document constitutes the Final Report of efforts undertaken under:

Grant No. N00014-89-J-3172/P00003
R&T Project: 4231042--04

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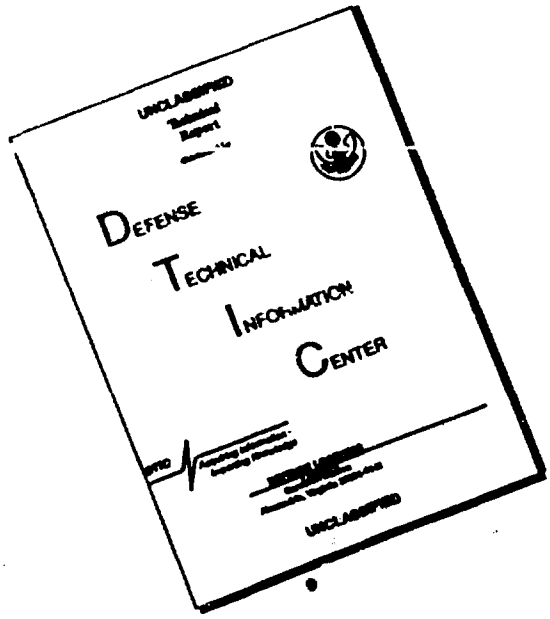

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GRANT PURPOSE

The purpose of this grant was to provide funding to conduct a high-school intern program jointly with the Dade County Public Schools. This program was supported by both the National Oceanic and Atmospheric Administration and the Navy. The conduct of the program, the personnel and effort, and the use of funds for direct and indirect expenses were generally as set forth in the Grantees' proposal entitled, "Partial Support of MAST Academy Outreach Program" dated April 28, 1992. Eligibility for this program was limited to Dade County high school students who meet the following criteria:

- o Entering grades 11 or 12.
- o Possess a minimum overall grade point average of 2.5 (acceptable), and 3.0 for scientific and laboratory research jobs.
- o Possess a good attendance record.
- o Successful completion of one or more of these courses: Biology, Marine Biology, Ecology, Chemistry, Physics, Computer Applications.
- o Recommended as a high achiever and hard worker who possesses a positive attitude. The student must be self-directed and able to work independently, if necessary. The student must be punctual and dependable.
- o Provide their own daily transportation.
- o Completed the application and interview process.

EXECUTION OF THE PROGRAM

Faculty at the Rosenstiel School and scientists at the NOAA/AOML and SEFC/NMFS laboratories, especially those who had participated in previous summer intern programs, were sent a request for summer positions and asked to fill out a job description form. These forms are attached as Appendix A. The completed forms were then sent to the MAST Academy, where the student applicants' skills were matched with specific job descriptions (i.e., those with computer and math skills were matched with a job in scientific data processing). Faculty and scientists at the three labs were then contacted and interviews with the student applicants arranged. The final list of students and supervising faculty is given in Appendix B. The program encompassed the period from July 6 through August 21, 1992.

These summer internships were paid positions and were available at three federally supported oceanographic centers. They are:

- o University of Miami, Rosenstiel School of Marine & Atmospheric Science
- o National Oceanic and Atmospheric Administration, Atlantic Oceanographic and Meteorological Laboratories.
- o National Marine Fisheries Service, Southeast Fisheries Center.

The terms of employment and opportunities in this program were as follows:

- o A maximum of fifteen internships were available through an application and interview process.
- o Employment period was from July 6 through August 21, 1992.
- o One annual elective high school credit was earned.
- o Each student earned $4.25 per hour for a 7.5 hour day and worked a total of 35 working days.

The 1992 timetable for this program was as follows:

April 22	Faculty position requests and job descriptions due in Dean's Office/RSMAS. UM administration of program carried out through this office. Job descriptions sent to MAST Academy program administrator.
May 6	Student applications due in MAST office.
May 7-10	Applications checked for completeness by MAST staff.
May 11-15	Potential employers called and interviews scheduled. Faculty and scientist mentors called and interviews scheduled.
May 18- June 5	Applicant interviews at job sites based on criteria stated on applications.
June 6-15	Mentors notify MAST of applicant decisions.
June 16-30	Students are notified of placement. MAST orientation for students with emphasis on job skills.
July 6	Students report to Dean's Office/RSMAS for orientation and a tour of the Rosenstiel School and to complete paperwork related to hiring.
July 7 - August 21	Students report to the job site Monday through Friday (or as arranged with mentor).
August 21-31	Students make up missed days of work to complete 35-day assignment.

The program administrator for the summer internship program at the MAST Academy conducted a post-internship survey to assist the University in both the preparation of this final report and in order to properly evaluate the effectiveness of this program. Students who participated in this program were asked to respond to a questionnaire detailing various aspects of their summer research experience. Twelve of the fifteen students placed with the University of Miami in this internship program responded to the questionnaire. The questionnaire assessed the program impact on participating students in the following areas:

- o Subsequent career choice.
- o Mentor contact.
- o Job opportunities and employability.
- o Academic standing and choice of curriculum.
- o Environmental awareness.

The results of the questionnaire (based on the 71% response level) are provided in Appendix C.

As is shown by the preliminary results, a large proportion of the interns report a positive influence on their high school grades after the internship. This has been the most consistent result of this program; in fact several of the interns from each summer program, throughout the nine years of this program, have decided that science is the career they want and make plans to attend either the University of Miami Undergraduate Marine Science or Environmental Sciences Program, or a similar program at another university of college. Conversely, one or two students each year decide not to pursue a career in science based on their hands-on experience in a laboratory. This latter result also can be considered a positive effect of the internship program as it has given potential college students a more realistic experience of what a science career entails. This allows them the opportunity to make a more reasoned decision in terms of their studies (and effectively acting as a weeding-out process early in the academic career).

Many of the interns, especially those who found the summer intern experience stimulating or enriching, are taking, or plan on taking, advanced science courses including advanced placement biology, chemistry and physics. Those who do not plan on taking advanced science courses generally fall into three categories: those who find that science is "harder" than they expected and seem daunted by the amount of work involved in both studies and actual physical research; those who find it less interesting than expected (a very small proportion of the respondents); and those who do not have these types of courses available at the school they presently attend.

The role of the mentor has proven to be pivotal in the experience of the students; the goal of the program is not only exposure to laboratory techniques but to those marine scientists who are willing to serve as active role models for these aspiring scientists. There are several scientists who have shown a special willingness to train and educate by example and who open their research activities for these summer interns each year. The students cite these mentors accessibility and patience, and their willingness to communicate about the research being done as the most positive aspect of this student-mentor relationship. Another very positive aspect of the student-mentor relationship occured when young women served their internship with a woman scientist or the Hispanic students had contact with Hispanic scientists. The student-mentor relationship is further enhanced by regular communication with the MAST staff coordinator who monitors progress of skill development, interpersonal relationships and work skills. Several of the interns report continued contact with their mentors throughout the year. As has been noted in previous reports, it is usually the interns who return for a second summer in the program who maintain contact with their mentors. In all cases where the administrators of the program have had personal communication with these students, there is a sense of excitement and interest in the sciences by these young science interns.

This intern program was created to provide primarily disadvantaged or minority high school students with the opportunity for direct science research experience as a means of stimulating interest in the science. It is specifically aimed at high school students to serve as an academic stimulus in the pre-college years. A perusal of the data gathered in the nine years of this program supports the yearly evaluation that this approach is effective in achieving it's programmatic goals. A substantial proportion of the students not only benefit academically from their participation, but are exposed to a more realistic experience of what a marine science career entails, including the physical requirements of laboratory and oceanographic research. The interns who work at RSMAS are also exposed to the academic environment in a direct way through their contact with graduate students and professors. Through this contact, the high school interns have a more realistic sense of the length of studies and level of expertise required for a career in marine science. Lastly, by providing this educational stimulus to students from racial, social or economic backgrounds that are under-represented in the field of science (black, female and Hispanic) this program fulfills a national mandate to promote increased academic excellence in math and the sciences among American youth, as well as providing more opportunities to minority and disadvantaged youth.

In the early years of the program the intent was to provide opportunities for inner city youth in marine sciences and was administered jointly with the Dade County Public School System as the "Inner City Marine Program". This partnership formed between Dade County Public Schools and the University of Miami is one of the most important aspects of this program -- for it benefits both students and the community, especially disadvantaged or minority students, by effective coordination of local educational resources. This program had such continued success in achieving its goals that it was incorporated into the curriculum of the newly formed MAST Academy (a marine science and technology high school) as a summer intern program. The focus has evolved through the years to include a stronger emphasis on academic excellence and exposure to oceanographic science (though it still serves its original purpose as an outreach opportunity for disadvantaged youth, accepting applicants from public and private high school students in Dade and Broward County). One finds that even with the creation of a high school dedicated to marine science and a general improvement and upgrading of public high school science education, high school students are not always taught necessary laboratory or computer skills. Students at the MAST have a greater exposure to the many and varied branches of marine science and better training in basic laboratory techniques, but many of the high school students who apply to this program do not have such an advanced science curriculum in their school. This program has been very effective in identifying local students with a predilection for science, and giving them the opportunity to experience many of the possibilities that exist in the oceanographic community for various types of research. The summer internships thus serve as an extension of the high school experience, opening up many previously unknown academic and career possibilities to those students who

have already proven they are capable of achieving academic excellence and realization of their goals.

Another positive result of the program is a greater environment awareness on the part of these students. The exposure to scientists in general, and oceanographic scientists in particular, exposes the students to specific aspects of the marine ecosystem not usually experienced in high school, among them an awareness of the actual effects of technologies and development on the environment. By working in a coral reef laboratory, with phytoplankton samples, or assessing data on coastal properties, these students gain specific knowledge of the natural world, the negative effects of urban development and the polluting factors associated with it (i.e., raw sewage spills in local waters). There has been a consistent response from the summer interns, on their follow-up questionnaires, of a heightened awareness of some of the local environmental problems that exist. A secondary effect of this increased awareness may be career or academic choices related to the fields of ecology, environmental law, or marine and coastal policy.

Lastly, this program has been a success in providing experience that improves job eligibility. Follow-up contact with former summer interns has shown that not only do many of these students feel more qualified to pursue jobs within the oceanographic and/or science community, they actually have gained some of the needed skills to perform well at these jobs. Several of the former interns are currently employed at the University or at the NOAA/AOML laboratory. We credit this program with providing these students with necessary research skills, and an understanding of new procedures. Indeed, many of the mentors note a maturation process in these high school students when exposed to graduate students, researchers and staff members during their internship. Though the focus of the program has shifted in the past two years from being primarily for inner city youth, the program still serves to attract a large percentage of black and Hispanic students (at least 50% of the interns), thus continuing to provide this much-needed opportunity to those economically disadvantaged. It is another indication of the success of the program that career opportunity and job eligibility have been inproved for these students.

APPENDIX A

JOB DESCRIPTIONS

FOR

MAST ACADEMY OUTREACH PROGRAM

SUMMER MARINE AND ENVIRONMENTAL SCIENCE
INTERNSHIP PROGRAM

July 6 through August 21, 1992

MARINE AND ENVIRONMENTAL SCIENCE
INTERNSHIP PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title research assistant Hours 20-30

Agency RSMAS, Center for Marine + Environmental Analyses

Job site address CIMAS Building, RSMAS, 4600 Rickenbacker

Immediate Supervisor Christine Harwell Phone 361-4168

Agency Contact Person _____ Phone _____
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16 bilingual English - Spanish preferred

Special Requirements familiarity with library; prefer knowledge
(ie: skills, course prerequisites, etc.) of Macintosh

Dress Requirements none

JOB DESCRIPTION

library research + general office work
in support of environmental policy
unit

MARINE AND ENVIRONMENTAL SCIENCE INTERNSHIP PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Hatchery Assistant Hours 9-5

Agency RSMAS

Job site address RSMAS FISH HATCHERY, VA. BEACH DRIVE

Immediate Supervisor Juan Tamarillo Phone 361-1236

Agency Contact Person M Clarke Phone 361-4703
(If different from immediate Supervisor)

Number of positions available 4

Minimum Age none

Special Requirements Ability to lift 40 lbs. Must be
(ie: skills, course prerequisites,etc.) physically able to work

Dress Requirements none Clothing, boots necessary

JOB DESCRIPTION

Help in raising fish and care of adult fish for reproductive and research studies.

MARINE AND ENVIRONMENTAL SCIENCE INTERNSHIP PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title: Summer Research Assistant — Hours: 9:00 a.m. to 5:00 p.m.

Agency: University of Miami, RSMAS, MPO

Job site address: 4600 Rickenbacker Cswy
Miami, FL 33149

Immediate Supervisor: Dr. Donald B. Olson — Phone: (305)361-4074

Agency Contact Person: Summa Finn — Phone: 361-4016
(If different from immediate Supervisor)

Number of positions available: two

Minimum Age: 15

Special Requirements: College preparatory math consistent with present highsch level
(ie: skills, course prerequisites,etc.)

Dress Requirements: Casual

JOB DESCRIPTION

Student is expected to assist and learn data processing, computer programming, and data analysis. A variety of research topics are available: satellite data and climate change; flow visualization; and numerical modelling.

MARINE AND ENVIRONMENTAL SCIENCE INTERNSHIP PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Research Assistant Hours 9 - 5

Agency RSMAS

Job site address 4600 Rickenbacker Cswy SLA 298

Immediate Supervisor Dr. Alina Szmant Phone 361-4609

Agency Contact Person Symma Finn Phone 361-[illegible] 4016
(If different from immediate Supervisor)

Number of positions available 2

Minimum Age 17

Special Requirements Biology, Chemistry, (computers)
(ie: skills, course prerequisites, etc.)

Dress Requirements Casual - shorts

JOB DESCRIPTION

Assist with research on coral physiology and with studies of nutrient effects on coral reefs and natural reefs.

MARINE AND ENVIRONMENTAL SCIENCE INTERNSHIP PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title LAB ASSISTANT Hours 9-5

Agency RSMAS

Job site address 4600 Rickenbacker Causeway, Miami FL 33149

Immediate Supervisor SWART Phone 361 4103

Agency Contact Person SUSANNA FINN Phone 361-4016
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16

Special Requirements Computer skills an advantage
(ie: skills, course prerequisites, etc.)

Dress Requirements (LAB is A/C, casual dress)

JOB DESCRIPTION
Sampling corals. Enter data into computer, Lab work

MARINE AND ENVIRONMENTAL SCIENCE INTERNSHIP PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Lab ASSISTANT Hours ~ 8-4 or 9-5 (flex.)

Agency University of Miami, RSMAS

Job site address 4600 Rickenbacker Cswy
Miami, FL 33149

Immediate Supervisor Larry Brand Phone 361-4138

Agency Contact Person _____ Phone _____
(If different from immediate Supervisor)

Number of positions available 2

Minimum Age 15

Special Requirements one science course
(ie: skills, course prerequisites, etc.)

Dress Requirements none (casual)

JOB DESCRIPTION

wash dishes

maintain aquaria

set up marine cultures

conduct experiments

MARINE AND ENVIRONMENTAL SCIENCE
INTERNSHIP PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Computer Programmer Hours Flexible

Agency University of Miami

Job site address University of Miami, Geo Acoustics Lab.

4600 Rickenbacker Causeway, Miami, Fl 33149

Immediate Supervisor Prof. Tokuo Yamamoto Phone 361-4637

Agency Contact Person _____ Phone _____
(If different from immediate Supervisor)

Number of positions available 2

Minimum Age 16

Special Requirements Base knowledge of computer, Math and Physics
(ie: skills, course prerequisites,etc.)

Dress Requirements No requirment

JOB DESCRIPTION

Participating in the sea going experiments, seismo-acoustic data collection and processing. The student is expected to have basic skills of computer programm in order to process collected seismo-acoustic data. Also, knowledge of Mathematics and Physics will help student to participate in the theoretical and experimental parts of the ongoing projects.

1992

MARINE AND ENVIRONMENTAL SCIENCE INTERNSHIP PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title RESEARCH AIDE (GEOLOGY) Hours 8:30-4:30

Agency UNIVERSITY OF MIAMI RSMAS

Job site address 4600 RICKENBACKER CSWY. MIAMI 33149

Immediate Supervisor Robert N. Ginsburg Phone 361-4875

Agency Contact Person _____ Phone _____
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16

Special Requirements PREFER SOMEONE WHO CAN TYPE AND USE COMPUTER
(ie: skills, course prerequisites, etc.)

Dress Requirements NO SPECIAL CLOTHING

JOB DESCRIPTION

ASSIST IN PREPARING SAMPLES OF SEDIMENTS AND ROCKS FOR ANALYSIS AND PERFORMING VARIOUS TESTS.

MARINE AND ENVIRONMENTAL SCIENCE
INTERNSHIP PROGRAM

JOB DESCRIPTION

MAST Academy
3979 Rickenbacker Causeway
Virginia Key, Florida 33149

Position Title Lab Assistant Hours 37.5

Agency Rosenstiel School of Marine & Atmospheric Science

Job site address 4600 Rickenbacker Cswy
Miami, Fl.

Immediate Supervisor Doug Campbell Phone 361-4708

Agency Contact Person B FINN — Phone —
(If different from immediate Supervisor)

Number of positions available 1

Minimum Age 16

Special Requirements None
(ie: skills, course prerequisites, etc.)

Dress Requirements normal lab clothing.

JOB DESCRIPTION

Density & salinity measurements of seawater
Other lab duties as required.

APPENDIX B

LIST OF STUDENT INTERNS AND MENTORS

FOR

MAST ACADEMY OUTREACH PROGRAM

SUMMER MARINE AND ENVIRONMENTAL SCIENCE
INTERNSHIP PROGRAM

July 6 through August 21, 1992

MAST SUMMER INTERNS AND MENTORS

Students Name	Campus location	Department	Supervisor/Mentor
Bueno, Joanna	RSMAS	MBF	Harwell, Mark
Camacho, Jorge	NOAA/AOML	OCD	Wanninkhof, Rik
Caraballo, Leo	RSMAS	MBF	Szmant, Alina
DeCardinas, Pedro	RSMAS	MBF	Clarke, Liz
Engler, Craig	RSMAS	MPO	Olson, Don
Garcia, Maria	RSMAS	MBF	Clarke, Liz
Guerra, Yoselin	RSMAS	MBF	Clarke, Liz
Helip, Amanda	RSMAS	AMP	Yamamoto, Tok
Leon, Rafael	NOAA/AOML	OAD	Craynock, Jules
Moorer, Marvin	RSMAS	MBF	Szmant, Alina
Munoz, Hazzen	SEFC	Fisheries	Duffie, Essie
Rementeria, Tomas	RSMAS	MAC	Campbell, Doug
Rodriguez, Manuel	RSMAS	MBF	Szmant, Alina
Rodriguez, Miriam	SEFC	Fisheries	Duffie, Essie
Romano, Maria	RSMAS	MBF	Brand, Larry
Simmons, Erica	NOAA/AOML	Library	Pikula, Linda
Small, Diana	RSMAS	Marine Dept	Hernandez, Terri
Simon, Eric	RSMAS	Marine Dept	Hernandez, Terri
Warwick, Eric	RSMAS	AMP	Yamamoto, Tok
Yaghdjian, Rouben	RSMAS	MBF	Brand, Larry

LEGEND:

MBF Marine Biology & Fisheries
OCD Ocean Chemistry Division
MPO Meteorology & Physical Oceanography
AMP Applied Marine Physics
OAD Ocean Acoustics Division
MAC Marine & Atmospheric Chemistry

APPENDIX C

MAST ACADEMY OUTREACH PROGRAM

MARINE & ENVIRONMENTAL SCIENCE INTERNSHIPS

ANNUAL CAREER FOLLOW-UP SURVEY

1992

PRELIMINARY REPORT

July 6 through August 21, 1992

1992-93
MAST ACADEMY OUTREACH PROGRAM
ANNUAL CAREER FOLLOW-UP SURVEY REPORT
MARINE AND ENVIRONMENTAL INTERNSHIP

OVERVIEW

A total of 29 senior high school students were placed in internship positions ranging from biologist assistant to computer programmer. Of the 29 interns, 17 were placed with University of Miami scientists. The interns were from 8 different high schools and one middle school, and consisted of 6 Blacks, 14 Hispanics, 8 Whites, 1 Asian, 20 males and 9 females.

SUMMARY OF FINDINGS

Surveys indicate that the internship program continues to have its greatest impact on school performance: all of the UM interns, and 96% of all interns surveyed (24) indicated a positive effect on grades. A positive influence on attitudes towards science were reported by 92% of all students. Half of the students plan to take additional science courses as a result of their experience.

Before participating in the internship program, 67% of the students indicated an interest in pursuing a career in science or maritime industry. That interest jumped to 75% for all interns, and 83% for UM interns upon completion of their internship. More than half of these students indicated that their mentor has had an influence on their career plans.

About 38% of the students surveyed have continued to have contact with their mentors since completing the program. Nine students have been offered part-time employment as a result of internship contacts; five of those students interned at UM.

Of all eligible interns, 89% requested that they be contacted to participate in the 1993 Summer Program. All eligible UM interns requested they be contacted.

1992-93
MAST ACADEMY OUTREACH PROGRAM
ANNUAL CAREEP FOLLOW-UP SURVEY REPORT
MARINE AND ENVIRONMENTAL SCIENCE INTERNSHIP

These survey results were gathered from students participating in the 1992 internship program. The survey included questions of two types. Questions A,J, and L were either general information or related to curriculum planning for classdays. All other questions were intended to assess program impact on participating students. Results are tabulated on the chart below. A narrative interpretation and/or explanation follows the chart.

The data shown below reflects student response to questions assessing impact brought about by participation in the Internship program. Two sets of data are supplied. One data column represents the student population funded through the University of Miami. The second column reflects all participating interns.

DATA

Question/Information	U.M. Interns	All Interns
Number of surveys completed	12/17 (71%)	24/29 (83%)
B. Were you planning a career in science before your internship?		
Yes	10/12 (83%)	16/24 (67%)
No	2/12 (17%)	8/24 (33%)
C. Are you now planning a career in science?		
Yes	10/12 (83%)	18/24 (75%)
No	2/12 (17%)	6/24 (25%)
D. Has there been continued contact with your mentor since last summer?		
Yes	4/12 (33%)	9/24 (38%)
No	8/12 (67%)	15/24 (62%)
E. Have these mentor contacts influenced your career choices?		
Yes	7/12 (58%)	13/24 (54%)
No	5/12 (42%)	11/24 (46%)
F. Have you been offered additional opportunities as a result of these contacts?		
Yes	10/12 (83%)	19/24 (79%)
No	2/12 (17%)	5/24 (21%)

G. As a result of the intern experience, have you participated in any of the activities listed below?		
1. Science/Environmental Clubs	4/12 (33%)	12/24 (50%)
2. Hiking	2/12 (17%)	2/24 (1%)
3. Canoeing	9/12 (75%)	15/24 (63%)
4. Camping	0/12 (0%)	0/24 (0%)
5. Snorkeling	7/12 (58%)	10/24 (42%)
6. Scuba Diving	2/12 (17%)	5/24 (21%)
7. Fishing	4/12 (33%)	6/24 (25%)
8. Sailing	3/12 (25%)	7/24 (29%)
9. Boating	6/12 (50%)	13/24 (54%)
10. Swimming	8/12 (67%)	11/24 (46%)
H. has your internship experience positively influenced your progress in school in any way?		
1. Grades	12/12 (100%)	23/24 (96%)
2. Conduct	9/12 (75%)	18/24 (75%)
3. Attendance	9/12 (75%)	19/24 (79%)
4. Attitude towards school	11/12 (92%)	19/24 (79%)
5. Attitude towards science	11/12 (92%)	22/24 (92%)
6. Attitude towards other subjects	8/12 (67%)	17/24 (71%)
I. Have you taken or are you planning to take additional science courses as a result of your internship experiences?		
Yes	6/12 (50%)	12/24 (50%)
No	6/12 (50%)	12/24 (50%)
K. Has your interest in environmental issues changed as a result of your internship experience?		
Yes	11/12 (92%)	21/24 (88%)
No	1/12 (8%)	3/24 (12%)
L. Are you interested in participation next summer?		
No, I am graduating high school and am not eligible.	4/12 (33%)	6/24 (25%)
Still eligible	8/12 (67%)	18/24 (75%)
Yes, Please contact me.	8/8 (100%)	16/18 (89%)
No, I am not interested.	0/8 (0%)	2/18 (11%)

Interpretation / Explanation

B/C Were you planning a career in science before your internship? Are you now planning a career in science?

Six of the twenty four students surveyed stated they will not be pursuing a science-related career. Of the eighteen who said they would, only two had not considered such a career prior to their internship experience.

"I already was interested in marine science." Tomas Rementeria

"I've wanted to become a marine biochemical or Naval architectural engineer." Jean Bendezu

"...a possible career in chemistry or biochemistry." Michael Warwick

D Has there been continued contact with your mentor since last summer?
___Yes ___No If Yes, Explain.

Several of the interns continue to work with their mentors part-time; one intern has continued to work as part of the Community Lab Research Program. Others have maintained more informal contact with their mentors, usually student initiated.

E Have these mentor contacts influenced your career choices?

"She showed me how interesting computer programming actually is." Rafael Leon

"...opened my eyes to chemistry." Tomas Rementeria

"He has helped me decide what area of marine biology I should pursue." Rouben Yaghdjian

F Have you been offered additional opportunities as a result of these contacts?

Job offers	9/24 (38%)
Support for college application	14/24 (58%)
Full-time employment	1/24 (1%)
Part-time employment	9/24 (38%)
Assistance with science fair projects/research	10/24 (42%)

G As a result of the internship experience, have you participated in any of the activities listed below?

1. Clubs (science/environmental)
2. Hiking
3. Canoeing
4. Camping
5. Snorkeling
6. Scuba diving
7. Fishing
8. Sailing
9. Boating
10. Swimming

Half of the interns have become members of a science or environmental club as a result of their intern experience; 63% have been canoeing, 54% boating, and 46% have taken up swimming.

H Has your internship experience positively influenced your progress in school in any way?

All of the UM interns, and 96% of all interns reported a positive impact on their grades. A positive influence on attitudes towards science was reported by 92% of the interns. At least 70% of the students considered the internship experience to be a positive influence on conduct, attendance, and their attitudes towards school in general.

"It made me realize how important a good education is in today's world" Long Ha

"...helped me see the bigger picture." Jorge Camacho

"It gave me a taste of how business is and showed me the true importance of a good education." David Whitling

I Have you taken or are you planning to take additional science courses as a result of your internship experiences?

Students checking yes listed courses in A.P. Biology and Chemistry, as well as Physics, Ecology, Oceanography, Marine Biology, and Environmental Science.

K Has your interest in environmental issues changed as a result of your internship experience?

Several students stated they were environmentally active even before their internship experience; 88% indicated they have since become more active. The majority of interns have participated in planting trees (83%), have been active in recycling programs (54%), or have joined environmental clubs (63%).

"I've always cared, I'm just more aware now." Ricardo Alvarez

Active in "energy conservation and energy-conscious landscaping." Rafael Leon

L. Are you interested in an internship next summer?

___ No, I am graduating high school, and am not eligible
___ Yes, please contact me for participation
___ No, I am not interested. Explain.

Of eligible interns, 89% expressed an interest in participating next year.